HIGH SPEED LIGHTERAGE ASSULT CONNECTOR

JOINT SEABASED THEATRE ACCESS WORKSHOP

FEBRUARY 9-10 2005

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NAVFACHQ

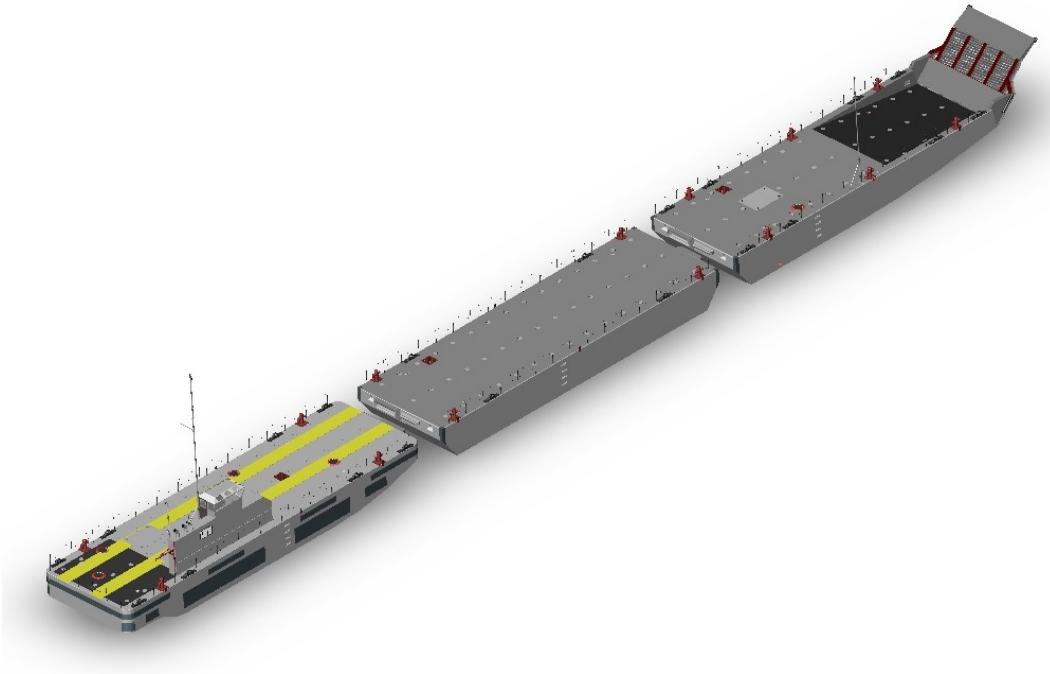
Agenda

- Current Lighterage
- Future Lighterage Requirements
- Seabasing Requirements
- R&D Efforts
- Questions

Current Lighterage

- **NL - Legacy**
  - **Speed – 3 Kts**
  - **Capacity – 205 LT**
  - **<1 ft freeboard**

- **INLS 2005 to 2025**
  - **Speed – 10 Kts**
  - **Capacity – 300+ LT**
  - **4 ft freeboard**

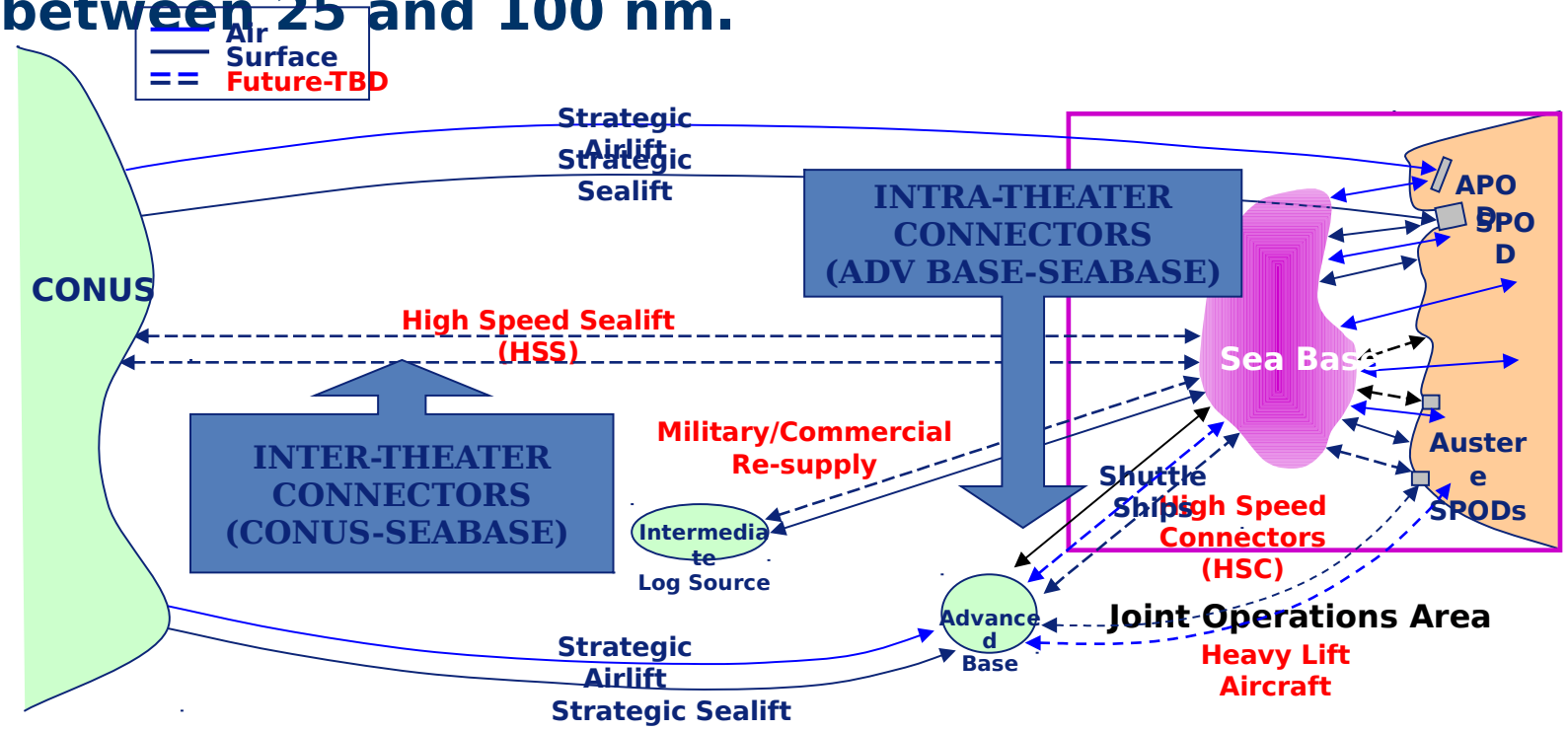


Future Lighterage Requirements

N42/N75 tasked Sealift Support Program Office (SSPO) to evaluate next generation lighterage to support MPF(F) and SeaBase

SEABASING REQUIREMENTS

- **Transport 1 Mechanized Battalion Landing Team to the beach in an 8 hr period from a distance of between 25 and 100 nm.**



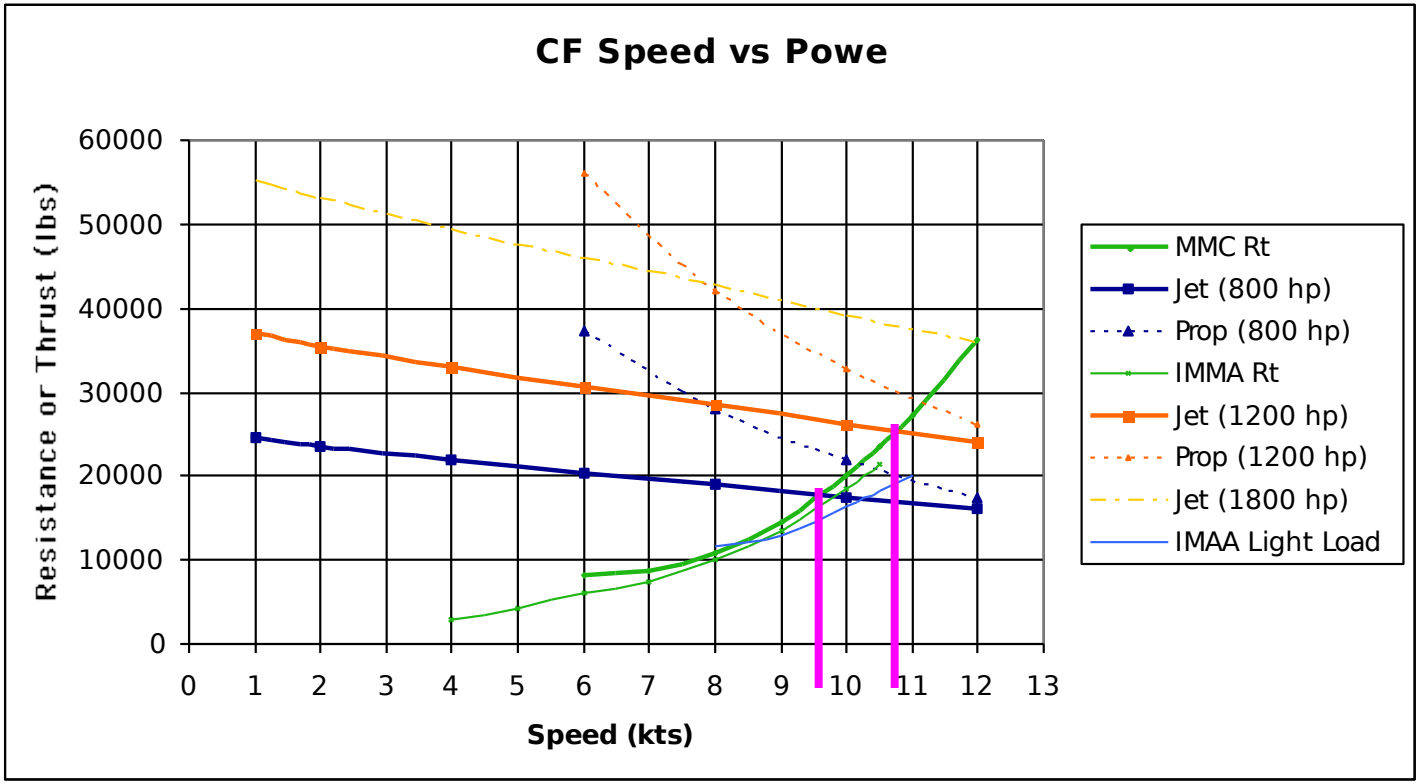
Sea Base leverages forward deployed, pre-positioned, and surge force posture. Arrive ready with scalable air, maritime, and ground forces on accelerated timelines.

Lighterage R&D Efforts

- Need to increase lighterage speed
  - Speed requirements need to be determined based on distance and number of craft to be carried
- Study conducted by NSWCCD Combatant Craft to increase speed of INLS causeway ferries
  - Study completed Oct 04
  - Approaches
    - Increased main propulsion power
    - Change from 360° waterjet to conventional propellers
    - Reduce wave making resistance - bow shape improvement
    - Reduce frictional resistance - air cushion options

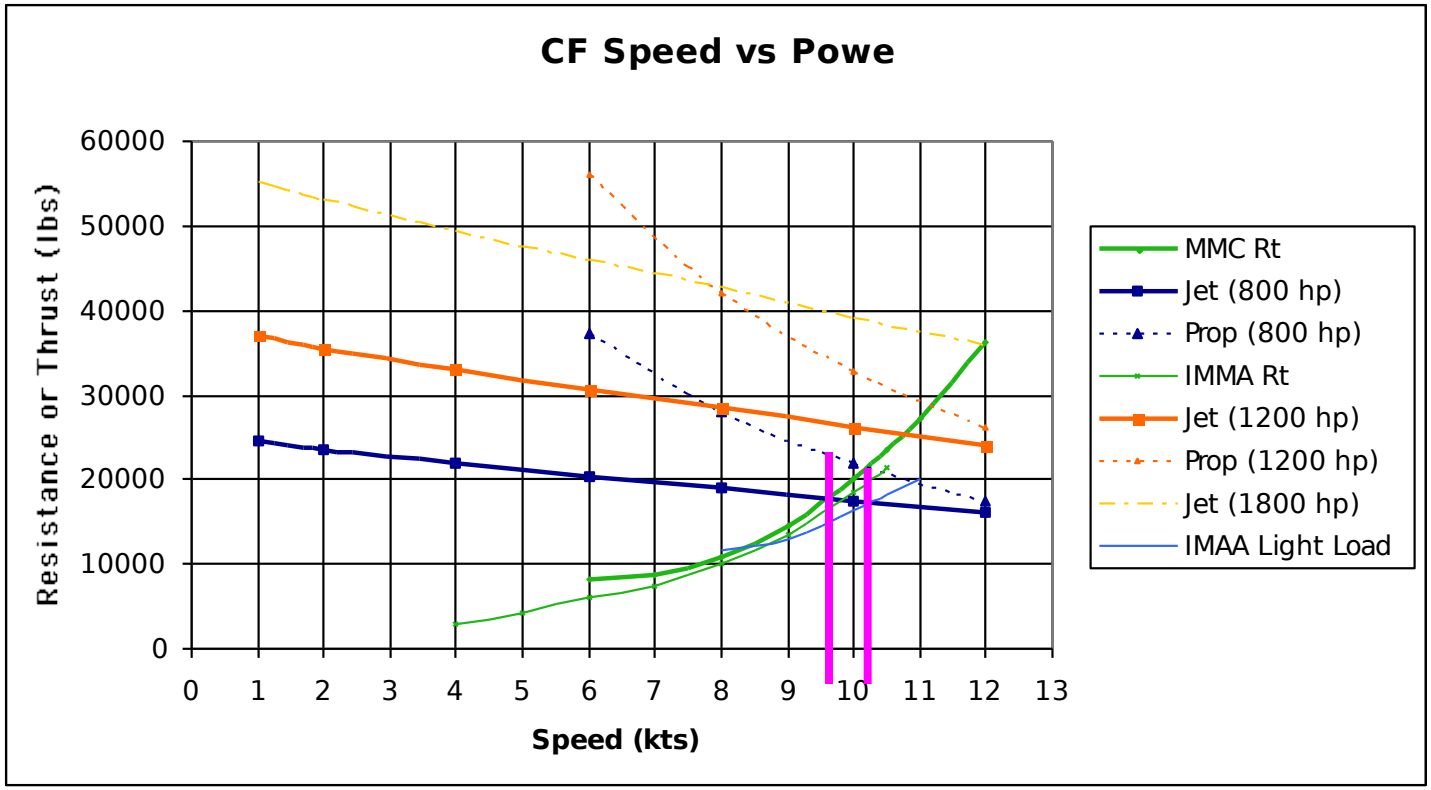
Lighterage R&D Efforts

- **Analysis – Larger Main Engines**
  - **Increasing the engines from 800 hp to 1200 hp will increase the speed approximately 1 knot**



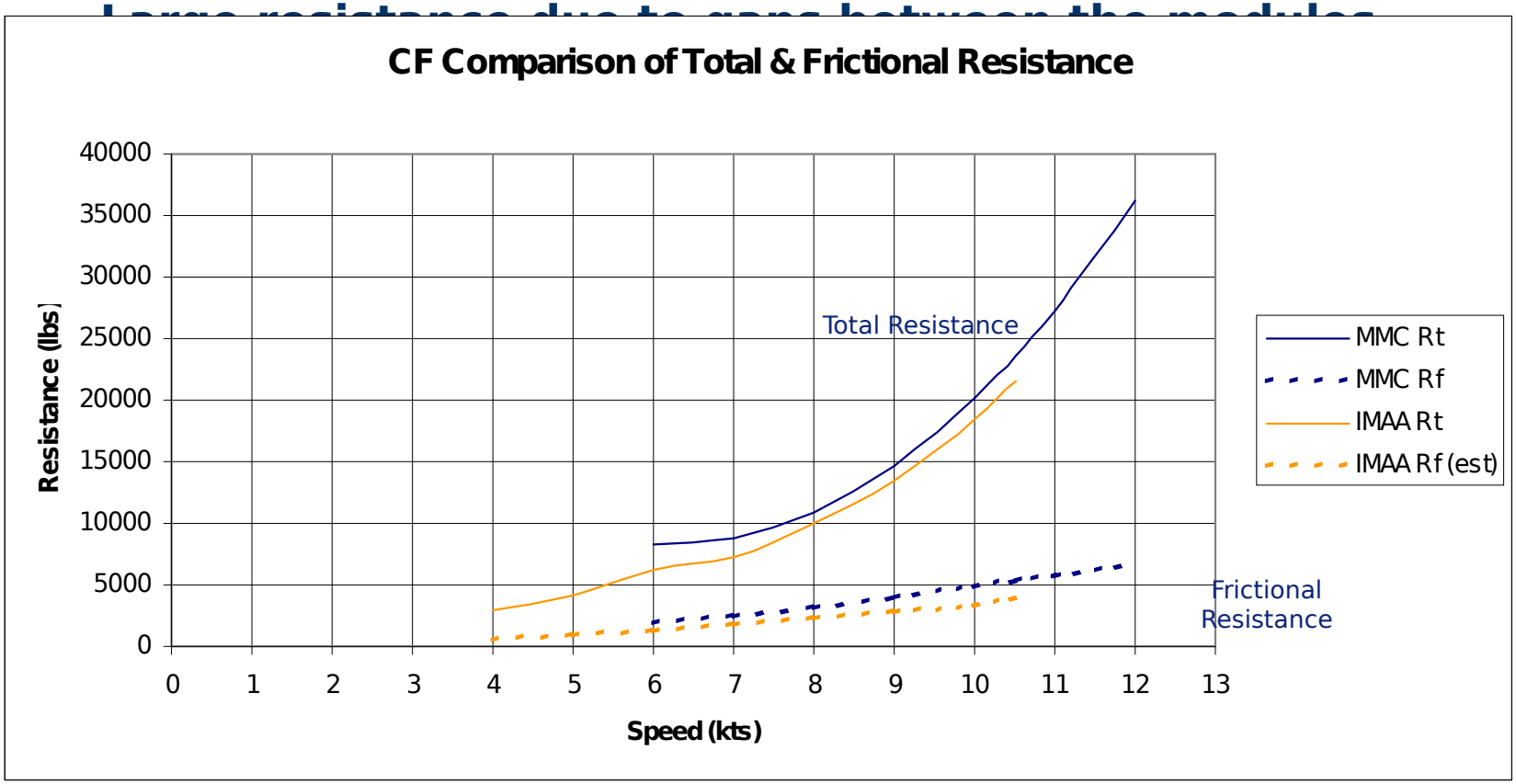
Lighterage R&D Efforts

- **Analysis – Change to Conventional Propellers**
  - **More efficient than waterjets**
  - **Will increase speed by about ½ knot**



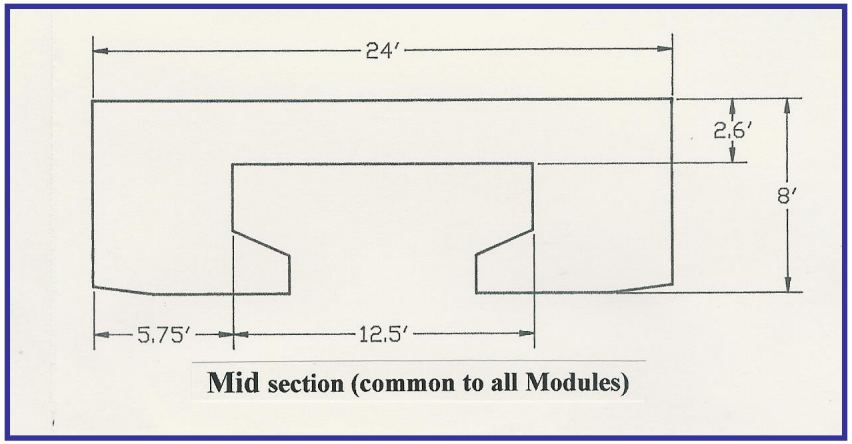
Lighterage R&D Efforts

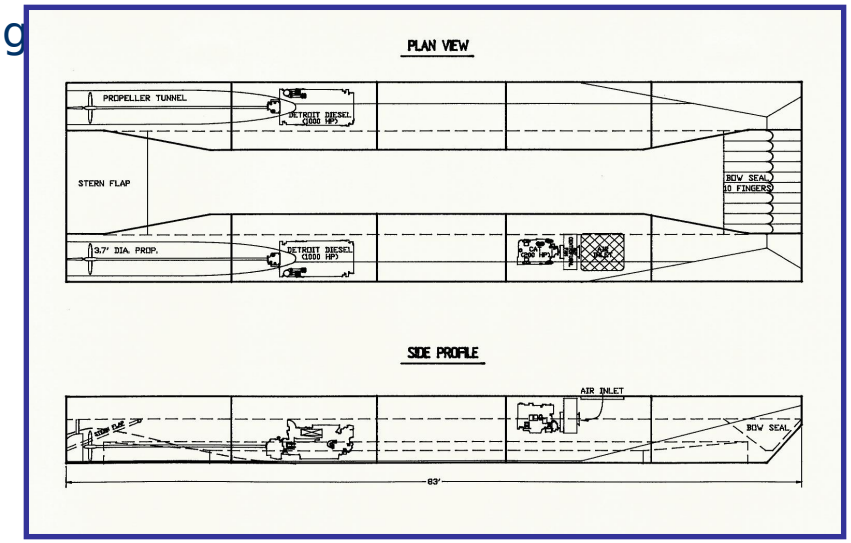
- **Analysis – Reduce Resistance Friction**
  - **Frictional resistance is only a small portion of total resistance**
  - **Large resistance due to gaps between the modules**



Lighterage R&D Efforts

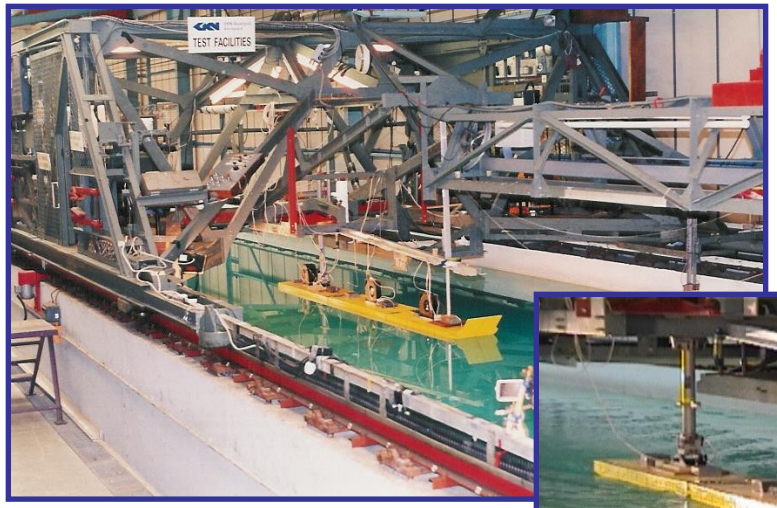
- **Need to reduce total resistance by using air cushion hull form**
  - **–Partial Air Cushion Support Catamaran (PACSCAT) chosen**
    - Designed for Moderate Speed and Moderate Payload vice High Speed Low Payload for other concepts (ie surface effect ships)
    - Concept designs used same dimensions as INLS
    - Would require hull shape redesign
    - Analysis then Model Testing

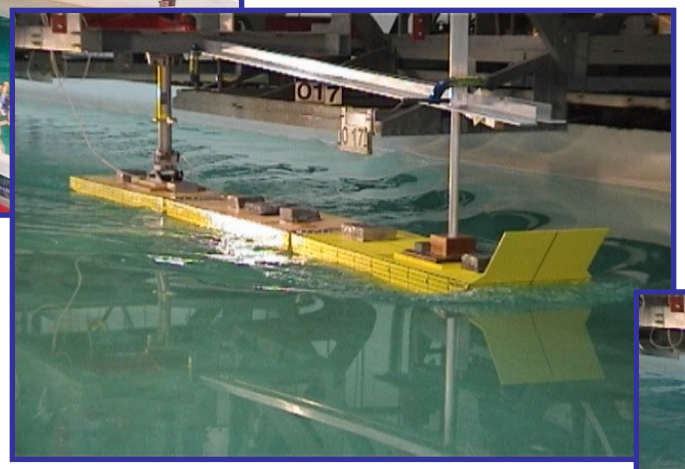


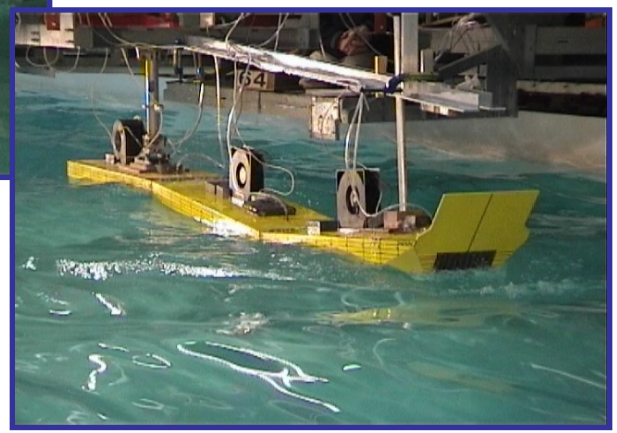


Lighterage R&D Efforts

- **PACSCAT Model Testing of Modified INLS Hull Shape**







Lighterage R&D Efforts

- **Results of Model Testing**
  - **Speed at full load increased by only 1 knot using PACSCAT technology**
    - At full load, the PACSCAT was operating at too high a cushion pressure
    - Large resistance caused by gaps between modules. Future would require methods to cover gaps
  - **Larger craft (92’ X 28’) would reduce cushion pressure and increase speed**

Future R&D Efforts

- Determine seabasing mission requirements re speed and payload
- Evaluate single hulled craft vice connected barges
- Look at various methods to increase speed to meet mission requirements, ie hull form, propulsion
- Look at various options to launch, ie FLO/FLO, LO/LO, Preposition
- Evaluate INLS Floating Causeway as a portable/beachable pier to permit offload of intra-theater connectors near the beach without requiring an intermediary platform
- Continuation of a multiyear SBIR contract
  - Concept Development and Design
  - Prototype Detailed Design
  - Prototype Production and Test

Questions